



(RESEARCH ARTICLE)



REDUCING PAIN DURING INTRAVENOUS CANNULATION USING TOPICAL LIGNOCAINE AND AIDET COMMUNICATION: A QUALITY IMPROVEMENT PROJECT

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ABSTRACT

Background: Intravenous (IV) cannulation is one of the most frequently performed nursing procedures and is commonly associated with pain and anxiety, which can negatively affect patient satisfaction. Evidence suggests that topical anesthetics and effective communication strategies can reduce pain during IV cannulation.

Objective: To evaluate the effectiveness of topical 2% lignocaine spray/Prilox gel, AIDET communication, and standardized IV cannulation practices in reducing pain and improving patient satisfaction.

Methods: A quality improvement project using the Plan–Do–Study–Act (PDSA) methodology was conducted in the surgical ward of ASHV, Chennai. Nursing staff were trained to administer topical anesthetic before IV cannulation, apply the 'U' fixation technique, and follow the AIDET communication framework. Pain was assessed using the Visual Analogue Scale (VAS), and patient satisfaction was measured using a 10-point satisfaction scale over a two-month implementation period.

Results: During August and September, 204 IV cannulations were performed. Topical lignocaine was used in 98% and 96% of procedures, respectively. Mean pain scores decreased from the baseline range of 4–6/10 to 2/10 in August and 1/10 in September. Patient satisfaction improved to 9/10 and 8.5/10 during the intervention period.

Conclusion: Implementation of topical lignocaine, standardized communication using AIDET, and the 'U' fixation technique significantly reduced pain during IV cannulation and improved patient satisfaction. The intervention has been adopted in additional clinical units.

Keywords: Intravenous cannulation; Quality improvement; Pain management; AIDET; Lignocaine spray; Patient satisfaction

1 INTRODUCTION

Intravenous (IV) cannulation is one of the most commonly performed invasive procedures in hospitals. Although routine, it often causes pain, anxiety, and discomfort, negatively influencing the patient's overall healthcare experience. Improving patient comfort during IV cannulation is an important component of quality nursing care.

Previous studies have demonstrated that topical anesthetic agents, distraction techniques, and standardized communication methods effectively reduce pain during IV cannulation. However, these interventions remain underutilized in many healthcare settings. Fatma Ferda Kartufan reported that pain reduction strategies significantly improve patient comfort during IV cannulation. Similarly, Monk et al. demonstrated that pain mitigation strategies improve patient experience during peripheral IV insertion.

Baseline assessment in the surgical ward revealed that patients experienced moderate pain during IV cannulation, with Visual Analogue Scale (VAS) scores ranging from 4 to 6 out of 10. Therefore, this quality improvement project aimed to reduce pain during IV cannulation through standardized nursing interventions.

2 MATERIALS AND METHODS

2.1 Study Design

A Quality Improvement (QI) project utilizing the Plan–Do–Study–Act (PDSA) cycle.

2.2 Study Setting

Surgical Ward, ASHV, Chennai, Tamil Nadu, India.

2.3 Intervention

The following evidence-based interventions were implemented:

- Staff education on the use of topical 2% lignocaine spray or Prilox gel before IV cannulation.
- Use of the 'U' fixation technique to stabilize the cannula and minimize mechanical manipulation.
- Standardized patient communication using the AIDET framework (Acknowledge, Introduce, Duration, Explanation, Thank You).

2.4 Plan

Identify nursing staff in the surgical ward and provide training on standardized IV cannulation techniques, topical anesthetic application, and AIDET communication.

2.5 Do

The interventions were implemented over a two-month period.

2.6 Study

Pain scores were assessed using the Visual Analogue Scale (VAS), and patient satisfaction was measured using a 10-point rating scale after IV cannulation.

2.7 Act

Following successful implementation and positive outcomes, the intervention was extended to other clinical units.

3 RESULTS AND DISCUSSION

A total of 204 IV cannulations were performed during the study period.

Table 1: Total IV Cannulations, Lignocaine Utilization Percentage, Mean Pain Score and Patient Satisfaction Score for patients undergoing Cannulation

Month	Total IV Cannulations	Lignocaine Used	Utilization (%)	Mean Pain Score (VAS)	Patient Satisfaction (/10)
August	100	98	98%	2/10	9/10
September	104	100	96%	1/10	8.5/10

Pain Scale (VAS); 0–3: Mild pain; 4–7: Moderate pain; 8–10: Severe pain; Patient Satisfaction Scale: 0–2: Poor; 3–4: Fair; 5–6: Good; 7–8: Very Good; 9–10: Excellent

The intervention demonstrated a marked reduction in pain compared with the baseline pain scores of 4–6/10. Consistent use of topical lignocaine, combined with effective communication and proper IV stabilization techniques, contributed to improved patient comfort and satisfaction. Staff adherence to the standardized procedure also improved first-attempt cannulation success and reduced patient anxiety.

4 CONCLUSION

The quality improvement initiative successfully reduced pain associated with IV cannulation through the implementation of topical lignocaine, standardized AIDET communication, and the 'U' fixation technique. The project resulted in improved patient satisfaction, reduced anxiety, standardized nursing practice, and fewer patient complaints. Based on these positive outcomes, the intervention has been implemented in additional clinical units.

STATEMENTS ON COMPLIANCE WITH ETHICAL STANDARDS

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Disclosure of conflict of interest

The authors declare that they have no financial or non-financial conflicts of interest related to this study.

Statement of informed consent

Patient satisfaction and pain assessment were conducted as part of routine clinical quality improvement activities. Confidentiality of patient information was maintained throughout the project.

REFERENCES

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